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## Biology

A. Description

1. Biology is the scientific study of life. This course focuses on developing the skills and foundational knowledge that will allow students to better unlock the beauty and intricacy of the natural world through the lens of scientific inquiry and critical curiosity. This course examines living things in a broad scope, from molecules to organisms to the biosphere, focusing on the many natural resources available locally.

B. Overarching goals of Biology

1. Familiarize students with the scientific method through direct inquiry and experimentation
2. Convey introductory-level information regarding the overarching concepts of biology ranging in scope from molecular biology to ecology
3. Relate concepts and skills to real-world current events and phenomena such as climate change, loss of biodiversity, the pandemic, etc.

C. Methods of inquiry and placed-based learning

1. Individualized inquiry
    a) Students are expected to design and complete laboratory procedures that encourage them to follow their own curiosity and engage them creatively
    b) Students will receive routine 1-on-1 guidance in achieving success in laboratory skills
2. Place-based approach
    a) Students are encouraged to seek out and make use of local natural resources in their direct vicinity for inspiration and inquiry
    b) Students are encouraged to interact with family members in an effort to engage in discussions relevant to biology
3. Critical thinking through experience

a) Students develop an understanding of science by first examining their own biases and then building science skills around this understanding b) Labs include an experimental component with student-driven, collaborative design c) Replication and refinement of procedures is encouraged, with attention to eliminating or controlling for sources of bias or error

D. Scope and Sequence of Semester 1 Topics and Events

<u>September</u>

Introduction to science and scientific methods and limitations

Examining personal biases

Introduction to biology topics: What is life? What unites all living things? What is the scope of biology?

Molecular biology

Inquiry Laboratory: intro to methods of inquiry in biology (observing/researching local flora, bubble lab; pH lab)

Current events: wildfires and climate change

<u>October</u>

Ecology

Human and comparative anatomy and physiology

Inquiry Laboratory: developing research and scientific inquiry skills (observing and researching local fauna, field observations, experiments with heart rate)

<u>November</u>

Human a&p, continued

Inquiry Laboratory: refining procedures for data collection (heart rate and breathing labs, observing interesting human sensory phenomena)

<u>December</u>

Microbiology and epidemiology with a

COVID-19 focus